



Garden Cuttings

a monthly newsletter for the discerning gardener

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A rose is a rose - is a rose

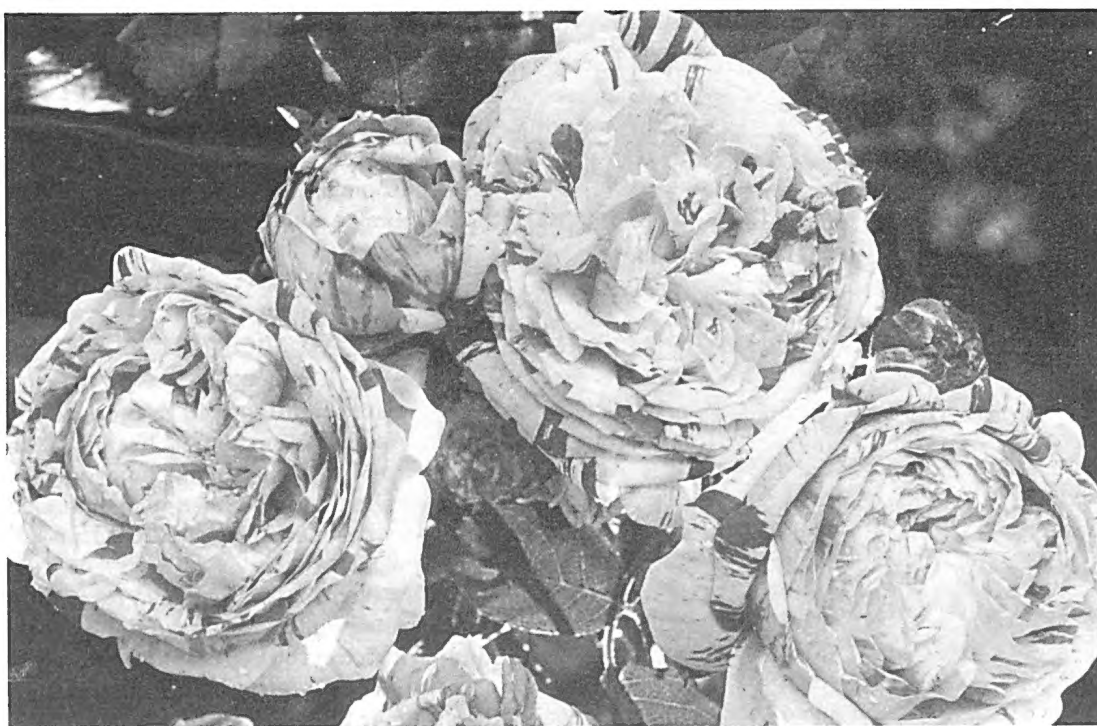
Most gardening journals don't have much to say about roses in March. June is supposed to be the month when you plant new ones, July when you prune old ones, and November is supposed to be the month when they are flowering; the cynic could add January is the month when they'll be covered with black spot. But nothing much happens in March - which is perhaps the reason why we've chosen to make a special feature of roses this month.

Which reminds me of that perplexed lady who complained that by the time she had done everything in the garden that the books told her had to be done that month, she didn't have time to notice that it was, in fact, quite beautiful! The best advice, perhaps, comes from that not inconsiderable gardener, garden designer, garden writer, and creator at his home at Great Dixter, in Sussex England of a truly great garden - I refer to Christopher Lloyd, who said that the best time to do anything in the garden is when you have time.

I do believe that gardening should be fun; if you can't have fun doing it, and time not just to notice the beauty but to get to know it intimately, then it's hardly worth doing at all. Perhaps we can become too slavishly tied to a "this month we must do so-and-so" regime.

So, to prove the point, as it were, it's roses in March, but the emphasis is very much on the older roses, and not just for the sake of nostalgia. It is a curious fact that, with the vast diversity of form, of flower formation, of foliage, of habit of growth, among these older roses and their undisputed talents, modern rose breeders turn out new varieties, year after year, which differ from the previous ones very little except in the colour of the petals. For many years a great many gardeners apparently believed that this stereotyped rose was the only one that existed. Now their eyes are being opened to the beauty, the diversity and the utter gardenworthiness of these older shrub roses. In some cases, too, they will be fascinated by their antiquity.

TIM NORTH



VARIEGATA DI BOLOGNA - a Bourbon rose with large globular blooms, striped purple-crimson on a white base. Recurrent; fragrant; tall, arching, almost climbing habit.

(photograph reproduced by permission of Ross Roses)

A few rose superlatives

The longest name ever given to a rose was 'Souvenir des Fiancailles de l'Archiduc Rudolphe d'Autriche et de la Princesse Stephanie des Pays-Bas'. This monumental title was bestowed by the French rose breeder Levet in 1880, but not surprisingly it was generally shortened to 'Stephanie et Rudolphe' or just 'Princesse Stephanie'.

The oldest known rose tree in Europe - and possibly in the world - is the Rose of Hildesheim, near Hanover in Germany. It is a *Rosa canina* var. *lutetiana*, and careful research has shown it to be around five hundred years old.

This, however, is not the biggest rose tree ever recorded. The biggest ever in Europe that we know of stood in the glasshouse of the nursery of E. Wehrle, at Freiburg, near Breisgau in the Black Forest district of Germany. The rootstock was budded with the rose 'Chromatella' in 1881; by 1900 it had covered an area of ninety square metres and carried more than a thousand flowers. Unfortunately it died in 1911, by which time the trunk was 110 centimetres tall, 38 centimetres in circumference, and the crown was 39 metres across, in the form of a bower on wires on the roof of the glasshouse.

Not far behind was a *Rosa banksiae* planted in the gardens of the Naval Administration in Toulon, France, by the botanist Bonpland in 1813. By 1870 the trunk, just above ground level, was 25 centimetres in diameter; the length of the new shoots were between 3.5 and 4.5 metres, and during the flowering season from April to May up to 50,000 flowers were counted.

The biggest rose in the world, however, is in the United States. This is a *Rosa banksiae alba-plena* standing in the garden of Mrs. Burlin Devore, in Tombstone, Arizona. It arrived there from Scotland in 1885, and by 1933 the stem had a diameter of 15 centimetres and the crown covered an area of 160 square metres; in 1969 the diameter of the stem near the base was over 30 centimetres and the crown covered about 360 square metres.

Roses may be said to be older than mankind; the oldest known fossils of a rose, or rather a rosaceous plant, are reputed to be 32 million years old.

Heritage Roses in Australia

Heritage Roses in Australia was formed in March 1979 and is a Fellowship of those who care about old garden, species and shrub roses. Members come from all parts of Australia, New Zealand, the United States of America, India, England and Germany. Contact between members is maintained by means of a Journal, which is issued four times each year. In addition members in close geographical contact are encouraged to meet during the flowering season by attending Heritage Rose days in each others' gardens. The form of these meetings is usually informal and friendly, and often leads to the swapping of cuttings of old roses and companion plants, and visits to other gardens where old roses are grown and treasured. Some members are involved with old roses through their professional interests as landscape designers, landscape architects, historians, authors, professional nurserymen and gardeners; others are floral artists, amateur rosarians, dedicated amateurs restoring old gardens or making new ones, exhibitors and breeders. All are vitally interested in preserving, propagating, distributing and popularising old roses.

The Journal is published in February, May, August and November. Membership lists are published as required and are available to all members. Membership is from 1st January through to 31st December each year, and the annual subscription is \$7.50 (overseas members should add \$3.00 (Aust.) to cover the cost of bank handling and conversion charges).

Applications for membership and subscriptions should be sent to the Editor of the Journal, Mr. Trevor Nottle, 5 Walker Street, Stirling, South Australia, 5152. Information on local activities may be obtained from any of the following Regional Coordinators:-

Mrs. Rose Marsh, 'Jam Valley', RMB 540, Kojonup, W.A. 6395.

Mrs. Pat Drinkwater, P.O. Box 105, Monto, Queensland, 4630.

Mrs. Isabel Chapman, 'Sylvan Glades',

Grays Rd, Fern Tree, Tasmania, 7101.

Mrs. Diana Morgan, 9 Lascelles Avenue, Toorak, Victoria, 3142.

Mrs. Eileen Bollard, C/- P.O. Box 49, Leongatha, Victoria, 3953.

Mrs. Jan Laidlaw, 2 Skene Street, Newtown, Victoria, 3220.

Mr. Esmond Jones, 13 Donnelly Street, Balmain, N.S.W. 2041.

Mrs. Stephanie Murphy,

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Mrs. Dorothy Noall,

24 Vanilla Avenue, Wahroonga, N.S.W. 2076.

Mrs. Gillian Batchen, 2 Courallie Ave, Pymble, N.S.W. 2073.

Contents

A rose is a rose - is a rose	Page 41
A few rose superlatives	Page 42
Heritage roses in Australia	Page 42
A new food for African violets	Page 42
What are old roses?	Page 43
The rose in history	Page 44
Book review	Page 44
Gardening in Perth in the 1850's	Page 45
Roses as ground covers	Page 45
Garden Gear - Andlite shadehouses	Page 46
Bank's florilegium	Page 46
Pruning and training seedling trees	Page 46
Micropropagation	Page 47
I name this plant	Page 48
A museum of garden history in London	Page 48
Quote of the month	Page 48

A new food for African violets

A specially formulated plant food designed to produce the maximum number of flowers on African Violets has just been released under the name 'Gro-Max'. It has a higher percentage of phosphorus than most fertilizers that have been recommended for African Violets in the past, the ratio being N.12% P.15.6% K 11.6%. All ingredients are highly soluble.

For those with only a few plants it is available in a 15 gram retail pack, selling in most retail outlets for just under \$2.00.

'Gro-Max' is distributed in Victoria by Fertool Distributors Pty. Ltd., Greaves Road, Narre Warren, Victoria, 3805, and by a number of distributors in other States.

What are old roses?

Contributed by Trevor Nottle,
South Australia

Old roses fall into five basic categories which are fairly distinctive.

1. Species roses - the wild roses of the world, all of the northern hemisphere. The dog rose (*R. canina*) is one which has naturalised in Australia. There are about 125 distinct species, most from Asia (about 85), the rest being split between Europe and North America. They vary from enormous climbers of great vigour, growing twelve metres or more a year, like *R. gigantea* from Burma and *R. longicuspis* from China, to tall arching shrubs such as *R. moyesii* from China, down to low spreading shrubs such as *R. spinosissima* from Europe, England and Scotland, and *R. rugosa* from Siberia to Canada.

Some of the Asian species are evergreen, like *R. wichuriana*, but most are deciduous. Some, like *R. setigera* and *R. virginiana*, have good autumn colour. Mostly they are appreciated for their simple and prolific flowers and their colourful display of seed pods in autumn.

Generally they are disease and pest resistant, and hardy. In some countries - Georgia and Soviet Central Asia, but less in Europe - they are grown as an agricultural crop as their hips are a valuable source of Vitamin C.

2. Old European roses - those developed in gardens before the introduction of rose species from China and Japan in the early nineteenth century. The main groups are -

Albas - white and flesh pink; tall bushes, silvery foliage

Gallicas - low compact bushes, pink to purple-grey, some striped

Centifolias - the 'Cabbage Roses'

Mosses - sports from the Centifolias, very popular in Victorian times; the buds and sometimes the stems are covered in dense sticky hairs which look like moss

Damasks - very tall bushes developed from roses grown in Roman times for making perfumes; all various shades of pink.

All the above flower only once a year, in very heavy flush in late October to early November. They make very spectacular shrubs.

3. Nineteenth Century Roses - evergreen and everblooming types arrived from China and were bred with the European roses to produce the Bourbons, Portlands and Hybrid Perpetuals. The range of colours did not change much but their habits did, and these shrubs are more like modern roses in thorn and leaf. The flowers are usually fully double and well scented. Towards the end of the nineteenth century the European breeders, using only Chinese species and Chinese garden roses developed the Tea Roses with a new range of colours - yellow, cream, apricot, flame and orange. These caused a sensation among rose fanciers and the old sorts were overthrown. From these our present day Hybrid Teas and Floribundas have been produced.

4. Shrub roses - these are comparatively new and have been bred mostly by growers who live in areas where climatic conditions make the growing of Hybrid Teas and Floribundas difficult. Breeders in Denmark, northern Germany, Russia, Canada and other cold areas have bred a race of shrubs which bloom heavily all through the brief northern summer. Many have been imported into Australia and bloom successfully here.

5. Sentimental roses - those which are treasured for a variety of reasons. Many are comparatively new, like the Hybrid Teas Dame Edith Helen, Picture and Blackboy, which are kept alive by people who have loving and pleasant memories brought back by remembering those associated with these plants.



JAMES MITCHELL - an example of a popular Moss rose (note 'moss' on buds and stems). Colour is lilac-pink, fragrant, spring-flowering only.

(photograph reproduced by permission of Ross Roses)

The rose in history

No flower has a longer or more fascinating history, or has had so much written about it and been so universally loved, admired and respected, as the rose.

It was the Greek poet Sappho who first christened the rose the 'Queen of Flowers' but roses had been cultivated long before that. *Rosa gallica*, the Red Rose, was the rose of the Persian Magi in the 12th Century B.C. and is probably the oldest plant in cultivation. The Persians loved their roses, in fact they are the only flowers known to have been grown in ancient Persian gardens. They held feast days out of doors for 'in the rose season one should drink large bowls of wine, for the rose is a guest of only forty days'. This, of course, alludes to the fact that the old roses of the Western world for the most part flowered only once a year, in mid-summer - recurrent flowering was unknown until the introduction of the China Rose at the end of the eighteenth century.

In the 5th Century B.C. Herodotus told of the garden of Midas where 'the sixty-petalled rose grew'; this was probably what is now called the Autumn Damask Rose (*R. bifera*) and not *R. centifolia*, as was once thought. Pagan Romans held revels with roses, while devout Christians adored them as symbols of Divine Love. The Abbot Walafrid Strabo (809 to 849 A.D.) wrote of the rose and the lily 'two flowers so loved and widely honoured that have throughout the ages stood as symbols of the Church's greatest treasures, for it plucks the rose in token of the blood shed by the Blessed Martyrs, and it wears the lily as a shining sign of the faith; pluck thou roses for war, for peace the smiling lily'.

For war they were indeed plucked during the War of the Roses. The Red Rose of Lancaster was probably the variant of *R. gallica* (*R. gallica officinalis*) famous throughout France as the Apothecary's Rose of Provins, for its peculiar property of preserving its delicate perfume even when the petals were dried and reduced to a powder. Edmund Crouchback, first Earl of Lancaster, had a French wife and property in France, so he may well have adopted it and taken it to England. There is an

interesting story that the striped version of *R. gallica officinalis* known as '*Rosa Mundi*' was so named after the Fair Rosamunde, mistress of Henry II of England; this may be true, for although there is no official record of *Rosa Mundi* until nearly four hundred years later, no one really knows just how old it is. The White Rose of York was almost certainly *R. alba*, which would have been brought to England by the Romans some hundreds of years earlier. And that's only the beginning of the story . . .

BOOK REVIEW

'Shrub roses in Australia'

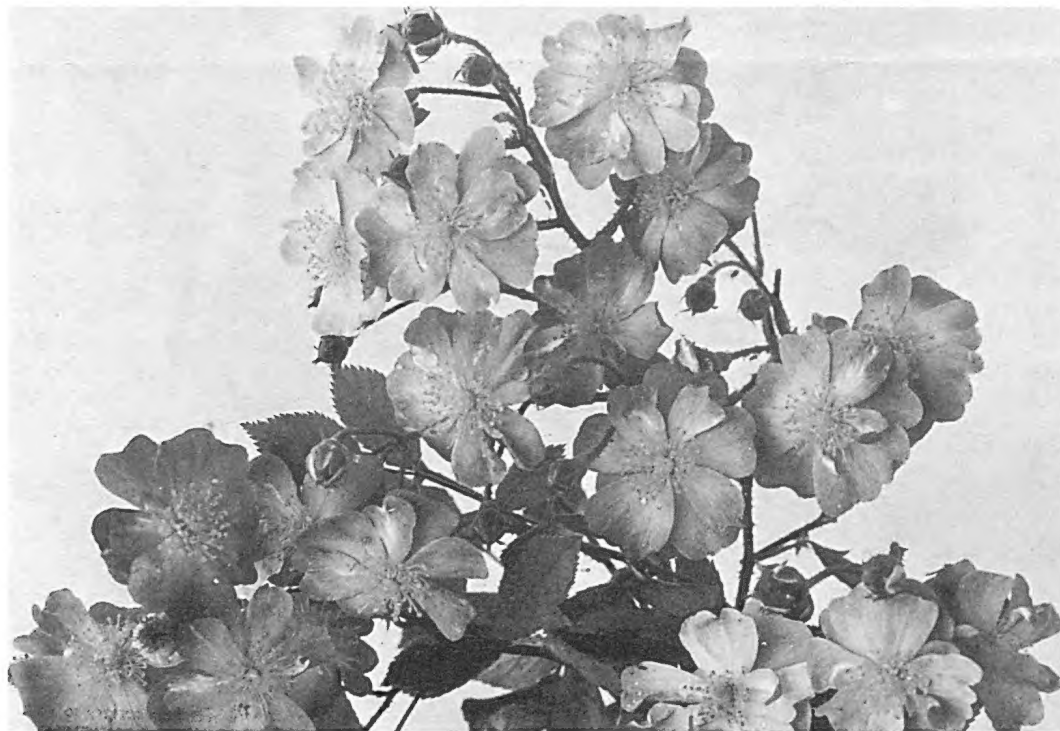
BY DEANE M. ROSS

Shrub roses and Deane Ross go together like the proverbial horse and carriage, so it goes without saying that this is a highly authoritative little book. First published ten years ago, when to most people roses were either hybrid teas or floribundas, it has now been revised and re-issued in soft back form, which makes it a book that everyone can afford.

Mr. Ross lists more than fifty different roses that, with almost undue modesty, he says "are available from one source or another in Australia". What he doesn't say, so we must say it for him, is that his own nursery, just re-established on a new site, is by far the largest source of supply of these old roses in the country, so that most, if not all, of those he writes about, he also grows.

This little book - little in size but remarkably comprehensive - is well arranged, and well illustrated with black and white photographs and line drawings. It includes chapters on landscaping with shrub roses, fragrance, culture, floral arrangements and competitions.

For all those who love old roses, or who would like to learn more about them, this book is a 'must'. It is available from Ross Roses, P.O. Box 23, Willunga, South Australia, 5172 for \$3.50, including postage.



'YESTERDAY' - a modern 'old-style' shrub, bred by the English breeder Jack Harkness; it received a certificate of merit from R.N.R.S. against other 'moderns'. Small (50mm) lilac-pink blooms, recurrent, a low spreading shrub, 1m high by 2m across. (photograph reproduced by permission of Ross Roses)

Gardening in Perth in the 1850s

The Horticultural Society of Perth was founded in 1855, just twenty-six years after the foundation of the city itself. It held an exhibition in the first year of its existence, but the second exhibition, in 1856, was obviously a noteworthy event. The words 'Perth Horticultural Society' were formed in the leaves and flowers of scarlet geraniums on the wall at one end of the room, His Excellency the Governor was received with the National Anthem played by the Pensioners' Band stationed outside, and the President, Mr. Clifton, gave an address of considerable length and eloquence. 'Fruits indigenous to Britain', proclaimed the worthy President, "and raised there only by the highest aids of culture and art, and many of the fruits of the East and the West, and of China, here grew side by side and ripened and attained the highest perfection, in the open air, little aided by culture and skill".

Mr. Clifton's principal interest appears to have been in the grape - which may possibly account for his eloquence - and he forecast a great future for the area in wine production. But apples, too, were exhibited "in such perfection as to afford proof that every species of the apple will here flourish and this Colony is consequently capable of being a Cider as well as a Wine producing country".

"The sample of our Colonial Wine", he went on to say, "this day exhibited are far superior to that of any before made public". The vegetables, however, did not equal those "which on every market day are to be found in Covent Garden", but nevertheless were held to be most creditable. Mr. Clifton urged those present to prevail upon their friends in England to send them "every valuable variety that may be introduced without material expense to any, and where once you have obtained a good kind of vegetable or fruit tree, cultivate it with the greatest care". He forecast the introduction of "other descriptions of vegetables" for example *Chenopodium Quinoa* and *Tetragonia Espansa* (sic);

he was presumably referring to what to-day we would call Good King Henry and New Zealand Spinach.

Fruit and vegetables clearly were the needs of the day. "Ornamental and Landscape Gardening must, I fear, be abandoned to the next generation. But many whom I now address may I hope live to see the establishment of a Botanical Garden on the outskirts of the town for recreation, and assisting in the attainment of a most useful and delightful branch of the science, and in which garden the fruits and vegetables and plants and flowers of every clime might be collected for dispersion through the colony, or for the contemplation of nature's most beautiful and wonderful creations in the Vegetable Kingdom".

Mr. Clifton's views on the role of a Botanic Garden are interesting. As King's Park dates from 1872 - only sixteen years later - his wish was fulfilled.

He concluded his address with this rousing call - "Let us then again I say urge you to take up the pursuit of gardening, fruit growing and vine growing by every means in your power, and as one of the most effective steps in that course, to promote the objects of this Society with zeal and generosity, being assured that there is nothing to which you can apply your leisure hours, your resources and your bodily exertions with so much benefit to the community of which you are members, and so much enjoyment and advantage to yourselves and families as the practice of gardening".

Fruits exhibited on this occasion included oranges, lemons, loquats, strawberries and bananas. Amongst the vegetables were potatoes, cabbages, cauliflowers, sweet turnips and swedes, carrots, beetroot, peas, asparagus, celery, lettuce, tomatoes and peppers. Unfortunately there is no description of the flowers, prizes being awarded simply for the 'best show of flowers from one garden' and 'the best show of flowers and bulbous plants'. There was, however, a separate prize for the best show of geraniums.

(Source: *Perth Gazette*, 10th October 1856)

Roses as ground covers

That magical term 'ground cover' nowadays means, to many gardeners about as much as a lifebelt does to someone who is drowning. "Give us ground covers" the cry goes up from all around. But strangely enough we don't often think of roses as possible ground covers and weed smotherers. Some, however, offer great possibilities in this direction.

Probably the best ground-covering rose is *Rosa wichuriana*, the one that gave its name to a whole group of what are rather loosely referred to as 'rambling roses'. *R. wichuriana* is naturally a prostrate plant, it is almost evergreen, its leaves are small, dense and glossy, and it will cover itself in late spring with small creamy-white flowers that smell of apples. It has another advantage in that it will grow quite well in sandy soil. None of its progeny are quite as successful in this role, though 'Alberic Barbier' is almost prostrate and is a possibility; 'Bloomfield Courage' with small single crimson flowers that have a white eye and are formed in close order along the arching stems, is moderately vigorous and almost thornless; 'Debutante' is very similar to 'Dorothy Perkins' but more resistant to mildew and 'Excelsa' is really a red-flowered sport of 'Dorothy Perkins' - all these have a more or less prostrate habit but don't usually make a dense enough mat to be completely successful as weed suppressors.

Much better is a hybrid between *R. wichuriana* and *R. rugosa* called 'Max Graf'. It has the typical dense rugosa foliage combined with the long arching canes of *wichuriana* that are completely ground hugging; it also roots as it goes. The single, quite large lilac-pink flowers come in spring.

R. x paulii, and its variant *R. x paulii rosea*, are almost as good. A hybrid between the English *R. arvensis* and *R. rugosa*, it's vigorous and prickly, again with rugosa-like foliage this time combined with the trailing habit of *arvensis*. The type has large white flowers with yellow stamens and a faint clove scent - they look rather like a clematis.

Then there is *R. macrantha*, a prolific plant that makes a tangle of arching branches, carrying large blush-pink flowers. It has two good variants, 'Daisy Hill' which makes a large dense mound with similar flowers to the type, though with two or three extra petals, and 'Raubritter', a very pretty rose which has its flowers in clusters, clear pink and semi-double.

R. x polliniana is a cross between *R. arvensis* and *R. gallica*; it's a low spreading shrub that will eventually make a mound about a metre high; the flowers are single, clear rose pink opening to blush and are held in small clusters.

Finally there is little *R. nitida*, really a dwarf bush no more than 60cm high, rather like a small rugosa with large single lilac-pink flowers and thick glossy foliage that will sometimes turn red in autumn. It will sucker itself into an ever-widening thicket, but has a somewhat invasive root system.

GARDEN GEAR

Andlite shadehouses

Andlite Shadehouses are made of rust-free galvanized weldmesh steel, and being in kit form are easily erected on any level site. Moreover they can be extended in length simply by adding on another unit.

Each house is supplied with six adjustable shelves, also in galvanized weldmesh steel; these shelves, when fitted, are extremely rigid and capable of supporting a considerable weight. Hanging baskets can be suspended from the central roof beam.

Any grade of shade cloth can be used to cover the houses, or alternatively they can become greenhouses if covered with a material such as Polyscrim. Fitting the shade cloth is quite a simple matter, using the special clips provided, but for those who lack the time or who are not confident of their ability in this direction the distributors will, for a small extra charge, both erect the house and cover it (at this stage, this offer applies to New South Wales only).

The following sizes are available:

6ft x 4ft 9ins; 6ft x 10ft; 6ft x 14ft 9ins

8ft x 4ft 9ins; 8ft x 10ft

10ft x 10ft; 10ft x 14ft 9ins

(10ft x 20ft will be available shortly)

Prices range from \$275 for the 6ft x 4ft 9ins size to \$440 for the 8ft x 10ft, which includes delivery within the Sydney metropolitan area; to other areas they will be despatched F.O.B. by rail. Installation, where required, of the two sizes mentioned would cost \$35 and \$55 respectively in the Sydney metropolitan area; installations charges outside this area will be quoted on application.

Further details may be obtained from the distributors:

Andlite, 20 Roseville Ave, Roseville, N.S.W. 2069.

Telephone: (02) 46 3125

Pruning and training seedling trees

Trees grown from seed or from seedlings need to be trained correctly to develop structural strength and to exploit the species' natural branching habit and form.

Dr. Richard W. Harris, of the University of California, distinguishes between 'excurrent' trees, that is those which produce a dominant main stem or leader, and 'decurent' trees, which are round-headed and spreading, with no main leader. Most conifers and a few non-conifers come under the first heading, while the majority of non-conifers come under the second. The type of habit is apparent at an early stage but is just the opposite of what one would expect. Excurrent trees show weak apical dominance, with laterals growing from almost every node, while the decurrent types show a strong terminal growing point and few or no laterals.

The only pruning needed by excurrent trees, says Dr. Harris, might be to keep a lateral from competing with the leader, or the removal of lower branches, if desired. A tree with a decurrent habit, however, may need considerable pruning to keep the leader dominant until the main branches can be selected. After the first year lateral shoots often outgrow the leader; therefore if laterals grow on the trunk lower than permanent branches are required they should be pinched back to keep the selected

Banks' florilegium

Sydney Parkinson was the artist who accompanied Sir Joseph Banks on his famous voyage with Captain Cook, and who painted much of Banks' huge Australian collection.

Unfortunately, he died on the voyage home, so Banks had to employ a team of artists, back in London, to work up Parkinson's sketches and water colours into finished portraits. He then employed eighteen engravers to transfer them to copper plates. This took thirteen years and cost Banks almost a million pounds in to-day's money; but for some reason the finished plates were never used.

Now they have been discovered, still in their original paper wrapping, in the vaults of the British Museum, by a printer, Joe Studholme, whose firm Editions Alecto specializes in limited editions prints.

Mr. Studholme has decided to issue the whole collection as an exercise in colour printing of the ultimate quality. This involves a Dutch technique called 'a la poupee', in which each colour, after being carefully matched with the original, is applied with almost surgical precision by doll-like twists of rag. After being printed the plates are finally heightened by hand painting.

The 738 plates will eventually - about 1987 - be presented in thirty-four Solander boxes, which were invented by Daniel Solander. One hundred and ten sets only will be printed. And the cost of each one? A mere £45,000 (about Aust. \$74,000). But if you want one you will have to be quick - three-quarters have already been subscribed.

permanent branches, and in particular the leader, dominant. Dr. Harris goes on to say "as the growing point of the leader grows beyond the height where the lowest permanent branch is required, pinch out the terminal inch or so of the tip. In about two weeks, if the tree is vigorous, two or more shoots will begin to grow below the pinch. While they are 6 to 8 inches long select the most vigorous upright shoot as the new leader, and select a lateral below this for the first permanent branch. Prune off any growth terminal to the leader and pinch other shoots back half way. As the leader continues to grow, terminal pinching can be continued to select additional main branches growing at the desired height and direction. With vigorous trees, as many as three permanent branches have been stimulated to grow in one season".

While vigorous branches with wide angles of attachment should be chosen for scaffold branches 'the caliper of each should be less than 75% of that of the trunk where the branch arises'. To direct a branch to more upright growth it may be necessary to prune it back to an upright lateral or bud, but a tree will become wider if tall upright branches that begin to bend outwards are not pruned. Laterals will begin to grow from near the top of the curving branch and these will be further from the tree's centre than if the original upright branch were headed to an outward-facing bud.

Micropropagation

Micropropagation, or tissue culture, or to give it a more strictly accurate name 'in vitro' culture, is a comparatively new horticultural technique, although it has, in fact, been practised since quite early in this century.

Briefly, it involves taking minute sections of plant tissue and growing them on in glass flasks, in a sterile nutrient solution that is usually solidified with agar jelly, under controlled conditions of light and temperature. These procedures are carried out in aseptic laboratory conditions; thus a very high degree of control is exercised; the tissues under culture are isolated from the influence of the rest of the plant and are supplied with precise levels of nutrients and hormones in any combination of light and temperature required.

The advantages of 'in vitro' propagation are several. In the first place many plants are slow or difficult to propagate by conventional means but can readily be propagated by this method. Secondly, most plants that are continuously propagated by vegetative means in time tend to become infected with virus or other systemic disease; a disease-free stock, once established, can be maintained under the hygienic conditions that prevail in this system. Thirdly, and this is the most spectacular, and from the commercial point of view the most attractive benefit, is that newly selected cultivars can, by this method, be 'bulked-up' far more quickly than by any other method. For example it normally takes about sixteen years for a single narcissus bulb to multiply a thousand-fold by natural means; by 'in vitro' culture a thousand bulbils can be produced in twelve to eighteen months.

The main disadvantages are that it requires a high level of expertise and, even for a large commercial nursery, a fairly high capital investment in buildings and equipment. For ornamental plants with a limited market, therefore, it may not yet be worth while.

Cultures can be grown from two different types of shoot, axillary and adventitious. In most plants every leaf has what is known as an axillary meristem which develops from a small group of cells derived from the main shoot; each of these axillary meristems has the potential to grow into a new lateral shoot, and when treated with cytokinin (a plant hormone) responds dramatically. The branched shoots which result are periodically split up into single or small clumps of shoots, and in this way a multiplication rate of up to $\times 8$ every six to eight weeks can be reached; even a multiplication rate of $\times 5$ every six weeks, which is quite normal, will mean 625 new plantlets after six months, and 390,625 after twelve months! In practice, of course, the rate of multiplication is limited by the amount of labour and other facilities available. The plantlets that are produced are equivalent to small rooted cuttings, but there has to be a very careful transition from 'in vitro' to normal growing conditions.

In some plants, however, axillary shoots are not formed in sufficient numbers for rapid multiplication, or may even be totally absent. In these cases adventitious shoots are used, and there are many examples of such shoots arising from a main organ such as a leaf; Begonias and Streptocarpus, which can be propagated from small pieces of leaf tissue, are two such examples. 'In-vitro' culture provides exactly the right conditions for this, as the correct ratio between auxin and cytokinin can be achieved.

There is a third method of 'in vitro' culture. By increasing the hormone concentration unorganized cell masses known as callus are formed at the expense of shoots. These continue to grow when cut into small pieces so almost unlimited quantities of callus can be produced, and if these pieces are transferred back to a medium with low hormone concentration adventitious shoots will be formed.

Theoretically this method of propagation results in 'cloning' a certain plant, and producing large numbers of individual plants that will be identical. Even conventional vegetative propagation can produce, every now and again, a 'sport' or mutant; the great majority of these mutants are, unfortunately, regressive and the mutant plants are normally rogued as soon as recognized. Does 'in vitro' propagation rule out the possibility of mutation? Contrary to what one might think, the answer is no, but it does depend upon the type of tissue used. Axillary meristems are genetically the most stable part of the plant. Adventitious shoots, on the other hand, may be mutant, and every derivative from a mutant shoot will be similarly mutant. Callus, again, shows a strong tendency to collect genetically changed cells. While culture from callus is particularly attractive as it offers the quickest method of 'bulking-up' and even the possibility of introducing some measure of mechanization, the resulting stock will be the least stable. This problem is compounded because some plants, strawberries for example, form both adventitious shoots and callus alongside the axillary shoots.

Many foliage plants, however, including some ferns, lend themselves to mass 'in vitro' culture. New forms of freesia, gladiolus, alstroemeria and narcissus are being produced by this method, and many fruit trees as well as rhododendrons and magnolias can now be propagated more easily. Another possibility that opens up is the medium term storage of material at low temperatures, thus allowing 'gene banking' to be done without the need for conventional routine care.

(Source: Masters Memorial Lecture 1980, given by Dr. Graham Hussey, John Innes Horticultural Institute, England)

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I name this plant . . .

To have a plant named after one may, at first sight, appear to be the highest of botanical honours, but sometimes the compliment goes awry. For example Professor Wistar, once Professor of Anatomy at the University of Pennsylvania, would probably not be amused to find his plant often spelled *Wisteria*; admittedly the correct version, *Wistaria*, is often used to-day but surely the pronunciation, 'Wistee-ia' has to be wrong. And no doubt the Condesa di Chincon would be far from pleased to find that the plant from which quinine is obtained is called Cinchon, instead of Chincon.

Mispronunciations are by no means uncommon. *Aubrietia* was named after the French botanical artist Claude Aubriet, so it should be 'o-breitia' and not 'oor-breitia'. *Dahlia*, rhyming with failure, is no compliment to Dr. Dahl until you give it the long a it should rightly have. *Camellia* was named after a Jesuit priest by the name of Georg Kamel (latinised into *Camellus*) so the e should be short rather than long, and *Kniphofia*, after the German Professor Kniphof, should be pronounced as it is spelt, complete with the k, and not 'nifoffia'. And what about *Choisya* - should it not be 'Schwarsia' rather than 'Chois-ia'? It was, after all, named after a French-Swiss, a M. Choisy. Would Mr. Carles, once British Consul in China, like having his *Viburnum* called 'carleesii'? And then, of course, we have to think of Mr. Stokes and Mr. Elwes.

Perhaps the worst insult, however, is to have a plant named after you for the wrong reason. The great Linnaeus happened once to have an argument with a St. Petersburg academician by the name of Johann Siegesbeck, so he found a rather smelly little weed which he promptly named *Siegesbeckia*! Of course, there have been a few punsters involved in naming plants; for example there was once a highly respected Spanish monk called Ximenez, and it was probably not too hard to make an anagram (almost) of his name and to christen his plant *Zexmenia*.

A museum of garden history in London

The Church of St. Mary-at-Lambeth, next to Lambeth Palace, London SE1, was closed in 1972 and left derelict. It is now being restored by the Tradescant Trust and is to become a museum of garden history.

In the churchyard, next to that of Admiral Bligh of the *Bounty*, is the tomb of the two Tradescants, father and son, gardeners to the first Lord Salisbury at Hatfield House from 1609 to 1614, and to Charles 1 and Henrietta Maria. From their extensive travels abroad they introduced into England many plants new to the country. Tradescant's 'Catalogus' (1634) and John Evelyn's copy of 'Musaeum Tradescantianum' (1656) have survived as valuable material on the history of gardening.

A seventeenth century garden is being created in the churchyard, and the building is now open on six days a week, Monday to Friday from 11.00 a.m. to 3.00 p.m. and on Sunday from 10.30 a.m. to 5.00 p.m.

To complete the restoration work and to set up the museum £250,000 is needed, and to assist with this project an organization called the Friends of the Tradescant Trust has been established with members throughout the world, thus emphasizing the international aspect. The yearly subscription is £5, and a quarterly newsletter will be issued giving details of coming events.

Further information can be obtained from The Tradescant Trust, 7 The Little Boltons, London SW10 9LJ, England.

Quote of the month

Roses, the garden's pride,
Are flowers for love and flowers for Kings,
In Courts desired and Weddings.

Thomas Campion

Garden Cuttings

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